

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application. An identifier indicating the status of each claim is provided.

Listing of Claims

1. (Currently Amended) A recording apparatus for recording streaming data on an information recording medium, the recording apparatus comprising:

detecting means for detecting a boundary between data sets that successively constitute the streaming data;

accumulating means for accumulating the streaming data; and

recording means for recording the streaming data accumulated in the accumulating means in a unit recording area of the information recording medium when:

the amount of the streaming data accumulated in the accumulating means has reached a capacity of the unit recording area of the information recording medium, and

the boundary of the data sets is detected by the detecting means, regardless of the amount of the streaming data accumulated in the accumulating means, and

wherein the recording means:

identifies a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area by determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area; and

adding padding data subsequent to the streaming data accumulated in the accumulating means until the total amount of data reaches the capacity of the unit recording area of the information recording medium, and

wherein the recording means records resulting data in the unit recording area of the information recording medium,

wherein the boundary of each data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, the recording means deletes the added padding data, and

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

2. (Original) A recording apparatus according to claim 1, wherein the streaming data is an MPEG stream and the data sets are groups of pictures.

3. (Original) A recording apparatus according to claim 1, wherein the unit recording area of the information recording medium is a cluster.

4. (Currently Amended) A recording method for a recording apparatus for recording streaming data on an information recording medium, the recording method comprising:

a detecting step of detecting a boundary between data sets that successively constitute the streaming data;

an accumulating step of accumulating the streaming data;

a recording step of recording the streaming data accumulated in the accumulating step in a unit recording area of the information recording medium when:

the amount of the streaming data accumulated in the accumulating step has reached a capacity of the unit recording area of the information recording medium, and

the boundary of the data sets is detected in the detecting step, regardless of the amount of the streaming data accumulated in the accumulating step;

identifying a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area;

adding padding data subsequently to the streaming data accumulated in the accumulating step until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

recording resulting data in the unit recording area of the information recording medium,

wherein the boundary of each data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, a second recording step deletes the added padding data, and

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

5. (Currently Amended) A computer readable recording medium having recorded thereon a computer-readable program for a recording apparatus for recording streaming data on an information recording medium, comprising:

program code for detecting a boundary between data sets that successively constitute the streaming data;

program code for accumulating the streaming data;

program code for recording the streaming data accumulated in the accumulating step in a unit recording area of the information recording medium when the amount of the streaming data accumulated in the accumulating step has reached a capacity of the unit recording area of the information recording medium; and

program code for recording the streaming data accumulated in the accumulating step in the unit recording area of the information recording medium, when the boundary of the data sets is detected in the detecting step, regardless of the amount of the streaming data accumulated in the accumulating step,

program code for identifying a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

program code for determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area; and

program code for adding padding data subsequently to the streaming data accumulated in the accumulating step until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

program code for recording resulting data in the unit recording area of the information recording medium,

wherein the boundary of each data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, program code for deleting padding data deletes the added padding data, and

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

6. (Currently Amended) A computer readable medium storing a computer program for allowing a computer that controls a recording apparatus for recording streaming data on an information recording medium to execute processing comprising:

a detecting step of detecting a boundary between data sets that successively constitute the streaming data;

an accumulating step of accumulating the streaming data; and

a recording step of recording the streaming data accumulated in the accumulating step in a unit recording area of the information recording medium,

when the amount of the streaming data accumulated in the accumulating step has reached a capacity of the unit recording area of the information recording medium; and

when the boundary of the data sets is detected in the detecting step, regardless of the amount of the streaming data accumulated in the accumulating step;

identifying a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area;

adding padding data subsequently to the streaming data accumulated in the accumulating step until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

recording resulting data in the unit recording area of the information recording medium,

wherein the boundary of each data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, a deleting step deletes the added padding data

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

7. (Currently Amended) A recording apparatus for recording streaming data on an information recording medium, the recording medium comprising:

generating means for generating the streaming data by encoding an information signal based on a predetermined encoding scheme so that the data amount of data sets that successively constitute the streaming data will be an integer multiple of a capacity of a unit recording area of the information recording medium; and

recording means for recording the streaming data generated by the generating means on the information recording medium,

wherein recording is initiated when the amount of the streaming data accumulated has reached a capacity of the unit recording area of the information recording medium,

wherein recording is initiated when the boundary of the data sets is detected regardless of the amount of the streaming data accumulated, and

wherein the recording determines a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area by:

determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area; and

adding padding data subsequently to the streaming data accumulated until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

recording resulting data in the unit recording area of the information recording medium,

wherein a boundary of a data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, the recording means deletes the added padding data, and wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

8. (Original) A recording apparatus according to claim 7, wherein the information signal is a video signal, the streaming data is an MPEG stream, and the data sets are groups of pictures.

9. (Original) A recording apparatus according to claim 7, wherein the unit recording area of the information recording medium is a cluster.

10. (Currently Amended) A recording method for a recording apparatus for recording streaming data on an information recording medium, the recording method comprising:

a generating step of generating the streaming data by encoding an information signal based on a predetermined encoding scheme so that the data amount of data sets that successively constitute the streaming data will be an integer multiple of a capacity of a unit recording area of the information recording medium; and

a recording step of recording the streaming data generated in the generating step on the information recording medium,

wherein recording is initiated when the amount of the streaming data accumulated has reached a capacity of the unit recording area of the information recording medium, and

wherein recording is initiated when the boundary of the data sets is detected, regardless of the amount of the streaming data accumulated,

an identifying step of identifying a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

a determining step of determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area;

a padding step of adding padding data subsequently to the streaming data accumulated in the accumulating step until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

a recording step of recording resulting data in the unit recording area of the information recording medium, and

wherein a boundary of a data set is recorded in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, a deleting step deletes the added padding data, and

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

11. (Currently Amended) A computer readable recording medium having recorded thereon a computer-readable program for a recording apparatus for recording streaming data on an information recording medium, the program comprising:

 a generating step of generating the streaming data by encoding an information signal based on a predetermined encoding scheme so that the data amount of data sets that successively constitute the streaming data will be an integer multiple of a capacity of a unit recording area of the information recording medium; and

 a recording step of recording the streaming data generated in the generating step on the information recording medium,

 wherein recording is initiated when the amount of the streaming data accumulated has reached a capacity of the unit recording area of the information recording medium; and

 wherein recording is initiated when the boundary of the data sets is detected, regardless of the amount of the streaming data accumulated in the accumulating step,

 an identifying step of identifying the recording start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

 a determining step of determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area;

 a padding step of adding padding data subsequently to the streaming data accumulated in the accumulating step until the total amount of data reaches the capacity of the unit recording area of the information recording medium, and

 a first recording step of recording resulting data in the unit recording area of the information recording medium, and

a second recording step of recording a boundary of a data set in a position coinciding with a cluster boundary

wherein, when the data set is deleted from the unit recording area of the information recording medium, a deleting step deletes the added padding data, and
wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.

12. (Currently Amended) A computer readable medium storing a computer program for allowing a computer that controls a recording apparatus for recording streaming data on an information recording medium to execute processing comprising:

a generating step of generating the streaming data by encoding an information signal based on a predetermined encoding scheme so that the data amount of data sets that successively constitute the streaming data will be an integer multiple of a capacity of a unit recording area of the information recording medium; and

a recording step of recording the streaming data generated in the generating step on the information recording medium,

wherein recording is initiated when the amount of the streaming data accumulated has reached a capacity of the unit recording area of the information recording medium; and

wherein recording is initiated when the boundary of the data sets is detected, regardless of the amount of the streaming data accumulated in the accumulating step,

an identifying step of identifying a start boundary at a beginning of the unit recording area and an end boundary at the end of the unit recording area;

a determining step of determining each time the stream data coincides to a complete data set if the complete data corresponds to a whole area of the unit recording area;

a padding step of adding padding data subsequently to the streaming data accumulated until the total amount of data reaches the capacity of the unit recording area of the information recording medium; and

a first recording step of recording resulting data in the unit recording area of the information recording medium; and

a second recording step of recording a boundary of a data set in a position coinciding with a cluster boundary,

wherein, when the data set is deleted from the unit recording area of the information recording medium, a deleting step deletes the added padding data, and

wherein streaming data in a next unit recording area coinciding with a next data set remains, and

wherein the recording apparatus is a video camera or a hard disk recorder.